

Injection Safety and Assisted Blood Glucose Monitoring Factsheet

Viral Hepatitis:

Hepatitis is inflammation of the liver. Hepatitis can be caused by viral infections. The three most common types of viral hepatitis in the United States are Hepatitis A, Hepatitis B and Hepatitis C. Viral hepatitis is the leading cause of liver cancer and the most common reason for liver transplantation. See table for more detailed information on Hepatitis A, B and C.

Health Care Associated Infections and Outbreaks:

Health Care Associated Infections (HAIs) are infections that patients acquire while receiving healthcare treatment for other conditions. The delivery of healthcare has the potential to transmit viral hepatitis to both health care workers and patients. An outbreak is defined as more cases of a particular disease than expected in a given area, or among a specific group of people, over a particular period of time. HAIs and viral hepatitis outbreaks are often associated with breakdowns in basic infection prevention procedures; for example, reuse of syringes and mishandling of medications.

HAI Prevention & Infection Control:

Basic Infection Control:

1. ALWAYS perform good hand hygiene.
2. ALWAYS use aseptic technique.
 - a. Handle medications and injection equipment (syringes, needles, IV tubing etc.) in such a way to prevent microbial contamination.
 - b. For example: perform proper hand hygiene, wear gloves, leave equipment in sterile packaging until ready to use and only access medication vials with sterile syringes
3. Store and prepare medications and supplies in clean area on clean surface.
4. Prepare medications as close as possible to the time of use.

Assisted Blood Glucose Monitoring and Insulin Administration:

1. Fingertick devices should never be used for more than one person.
2. Whenever possible, blood glucose meters should not be shared.
 - a. If they must be shared, the device should be cleaned and disinfected after every use, per manufacturer's instructions. If the manufacturer does not specify how the device should be cleaned and disinfected then it should not be shared.
3. Insulin pens are for single-patient-use only and should never be used for more than one person.

Injection and Medication Vial Safety:

A safe injection does not harm the recipient, does not expose the provider to any avoidable risks and does not result in waste that is dangerous for the community.

Single-Dose Vials:

1. Single- dose vials are for use on one patient only.
2. Do not combine or pool leftover contents of single-dose vials.
3. Do not store leftover contents of a single-dose vial.

Multi-Dose Vials:

1. Multi-dose vials should be dedicated to a single patient whenever possible.
2. Multi-dose vials should not be stored or accessed in the immediate patient treatment area for example patient rooms and operating rooms.
3. If a multi-dose vial enters the immediate patient treatment area, it should be dedicated to that patient only and discarded after use.

Intravenous Fluids:

1. Do not use bags or bottles of intravenous solution as common source of supply for more than one patient.
2. IV bags, tubing and connectors are for single-patient use only.

Lumbar Procedures:

1. Wear a surgical mask when placing a catheter or injecting material into the spinal canal or subdural space (i.e., during myelograms, lumbar puncture and spinal or epidural anesthesia)

Additional Resources:

Websites:

- CDC Viral Hepatitis: <http://www.cdc.gov/hepatitis/>
- CDC Healthcare-associated Infections: <http://www.cdc.gov/hai/>
- CDC Injection Safety: <http://www.cdc.gov/injectionsafety/>
- One and Only Campaign: <http://www.oneandonlycampaign.org/>

Web Documents:

- Diabetes and Viral Hepatitis: Important Information on Glucose Monitoring <http://www.cdc.gov/hepatitis/Settings/GlucoseMonitoring.htm>
- 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings <http://www.cdc.gov/hicpac/pdf/isolation/Isolation2007.pdf> (Specifically, the following sections: I.D.2 pg 34, II.D. Hand hygiene pg 49, II.E Personal Protective Equipment pg 49, II.F. Safe work practices pg 55, II.J Patient care equipment and instruments pg 61, III.A Standard Precautions pg 66)
- Guidelines for Environmental Infection Control in Health Care Facilities, 2003 http://www.cdc.gov/hicpac/pdf/guidelines/eic_in_HCF_03.pdf

Journal Articles:

- Blood Glucose Monitoring equipment:
 - Louie RF, Lau MJ, Lee JH, et al. Multicenter study of the prevalence of blood contamination on point-of-care glucose meters and recommendations for controlling contamination. *Point of Care* 2005;4:158-163.
 - Thompson ND, Perz JF. Eliminating the blood: Ongoing outbreaks of hepatitis B virus infection and the need for innovative glucose monitoring techniques. *J Diabetes Sci Technol* 2009;3(2):283-288.
- Medication Handling:
 - Bennett SN et al. Post-operative infections traced to contamination of an intravenous anesthetic, propofol. *NEJM* 1995;333:147-154.
 - Fischer GE et al. Hepatitis C virus infections from unsafe injection practices at an endoscopy clinic in Las Vegas, Nevada, 2007-2008. *CID* 2010;51:267-273.
 - Gutelius B et al. Multiple clusters of hepatitis virus infections associated with anesthesia for outpatient endoscopy procedures. *Gastroenterology* 2010;139:163-170.
 - Thompson ND et al. Nonhospital health care-associated hepatitis B and C virus transmission: United States, 1998-2008. *Ann Intern Med* 2009;150:33-39.
 - Alfurayh O. et al. Hand contamination with hepatitis C virus in staff looking after hepatitis C-positive hemodialysis patients. *Am J Nephrol* 2000;20:103-106.

Webinars:

- [Injection Safety: What Every Nurse Working in an Ambulatory Surgery Center Needs to Know](http://www.aorn.org/education/webinars/InjectionSafety/InjectionSafety.aspx) (AORN Webinar, 4/17/13) <http://goo.gl/K57qdM>
- Take Your Best Shot: Injection Safety: http://www.albany.edu/sph/cphce/phl_0511.shtml
- Infection Prevention Training for Ambulatory Surgical Centers <http://goo.gl/QIY4QH>

Table 1: Viral Hepatitis Information

	Viral Hepatitis A (HAV)	Viral Hepatitis B (HBV)	Viral Hepatitis C (HCV)
Routes of Transmission	Ingestion of fecal matter, even in microscopic amounts, <ul style="list-style-type: none"> • Sexual contact with an infected person • Ingestion of contaminated food or drinks 	Contact with infectious blood, semen, and other body fluids, primarily through: <ul style="list-style-type: none"> • Birth to an infected mother • Sexual contact with an infected person • Sharing of contaminated needles, syringes or other injection drug equipment • Needlestick or other sharp instrument injuries 	Contact with blood of an infected person, primarily through: <ul style="list-style-type: none"> • Sharing of contaminated needles, syringes, or other injection drug equipment Less commonly through: <ul style="list-style-type: none"> • Sexual contact with an infected person • Birth to an infected mother • Needlestick or other sharp instrument injuries
Persons at Risk	<ul style="list-style-type: none"> • Travelers to regions with intermediate or high rates of Hepatitis A • Sexual contacts of infected persons • Household members or caregivers of infected persons • Men who have sex with men 	<ul style="list-style-type: none"> • Sexual contacts, household members or caregivers of infected persons • Men who have sex with men • Users of injection and non-injection drugs • Persons with clotting-factor disorders 	<ul style="list-style-type: none"> • Current or former injection drug users • Recipients of blood transfusions or organs before 1992 • Hemodialysis patients • Persons with known exposures to HCV (e.g., healthcare workers) • HIV-infected persons • Infants born to infected mothers
Symptoms of Acute Infection	<i>Symptoms of all types of viral hepatitis are similar and can include one or more of the following:</i> • Fever • Fatigue • Loss of appetite • Nausea • Vomiting • Abdominal pain • Jaundice • Gray-colored bowel movements • Joint pain		
Vaccine Available	Yes	Yes	No
Treatment	<ul style="list-style-type: none"> • No medication available • Best addressed through supportive treatment 	<ul style="list-style-type: none"> • Acute: Supportive treatment • Chronic: Regular monitoring for signs of liver disease progression; some patients are treated with antiviral drugs 	

Sources:

- Centers for Disease Control and Prevention Division of Viral Hepatitis and National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (2013, March 12). *Viral Hepatitis* Retrieved from <http://www.cdc.gov/hepatitis/>
- Centers for Disease Control and Prevention National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) Division of Healthcare Quality Promotion (DHQP). (2010, December 13). *Healthcare-associated Infections (HAI)* Retrieved from <http://www.cdc.gov/HAI/burden.html>
- Centers for Disease Control and Prevention National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) Division of Healthcare Quality Promotion (DHQP). (2013, June 6). *Injection Safety* Retrieved from <http://www.cdc.gov/injectionsafety/>